

=====

Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: markspencer

Timestamp: Tue Jul 10 07:45:42 EDT 2007

=====

Application No: 10576670 Version No: 2.0

Input Set:

Output Set:

Started: 2007-07-06 15:28:52.737

Finished: 2007-07-06 15:28:52.858

Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 121 ms

Total Warnings: 0

Total Errors: 0

No. of SeqIDs Defined: 4

Actual SeqID Count: 4

SEQUENCE LISTING

<110> JOHNS HOPKINS UNIVERSITY
ROTHSTEIN, JEFFREY D.
CHUNG, DOROTHY

<120> NEUROPROTECTION WITH BETA-LACTAM COMPOUNDS

<130> 46594-0004-01-US

<140> 10576670

<141> 2007-07-06

<150> PCT/US2004/035011

<151> 2004-10-21

<150> 60/513,037

<151> 2003-10-21

<150> 60/541,589

<151> 2004-02-04

<160> 4

<170> PatentIn Ver. 3.3

<210> 1

<211> 4696

<212> DNA

<213> Homo sapiens

<400> 1

```

aaaaccacca ggggtgttgc tggaaagttt ttattcctgg attaaaggca aggatcagcc 60
tgtattttag caatttcttt ttaagggttaa tgtcccatgc gccacctact tctggggccc 120
tgttccagcc cttctttatg tgttgaccac ttctaggtcc agcacttccc aactctgctg 180
cgcagtggac tcaatcccct ggggaagtcct ttaaaaatgc ccaagtcagc ccccgctac 240
cccaaagat gcatggacca gaaatctctg aaagggtggc tgagtattac tattttctaa 300
aaggctctct cagaccatth taatgggcac ccagtgttga aaataactgc tccagtttgt 360
taaaaaataa ttggtgtgaa tattggcaaa agcctctctg caaaaagaa gagaaccagt 420
ttcttctagc taatgtttgt tagccagaat tatctgtggc atagtccatg tgacttaata 480
gacctggtct tccagggcag ctgaatgcaa atgtttctca cgtgtagaac gggatgtcag 540
ggcttacaga gaaagtggga aactggaatg atgactccat ctaattcggc catgctggat 600
gattcacctg gattctctca tgtcctgagc attgaaaaca taatgaagag tttttaaatt 660
gaatgtttta aagagtga aaactccat ccctttttct gtttcctttt accttgtatt 720
tatgtaccac caggtacctt gctcttggca gtgagcgtga atgaatggca cagctcagcc 780
cctgaagcct gtgtgcagag attgagggat tgtgatggag tagttcattc atgctcatgt 840
taaggggggt gctaatagca gactagtgtc cctgcgatta ttaatatcta ggtctgggac 900
agattgtgat ggcttctttt ccagttgcca cctcagcaga aagggaataa gaaaacccta 960
acttgtaaag ttagacaatt agactgtaaa gtttgtatat gtgacaactt cagatacaaa 1020
gacacacact tacccttgac ggggcttaag aggagagtgt caaacataat accaaagtga 1080
aagaagatag ctcttcctct acaaattatt tttaaacaca tttaccaggt taaacaataa 1140
ctaatttttc ggaagagaag agtaccctaa gtcaaatgcc ctaagacgaa gagatgctta 1200
tggcattttt ttttaataaa agaaaatgca aagttagagt ggttctgaag gaacctagga 1260
tgaataaggt acagacatga ttattctaatt ggtgcagaca ggattgagag agaagggggg 1320
aggggagaga tggagaaagg catggatgga agatgacgtt tggattcaga ttttgaaaag 1380
gagagtaaag gaaggaggtg agcagagatt tattttttta attttattaa tgtgttttcc 1440
cctctttttc ttgttatttt tctcatctgt ctgttcatac ttggatattt tgtccaataa 1500

```

actatcttct	aaggactctg	aaaatgcact	gaatatTTTT	ggagggttta	ctgggggtgcc	1560
agacgccact	ttaggagttt	tacatatcct	ctccatttca	tttagttctc	ttagcacaga	1620
gaagtgggag	aagatagtc	cattttacag	gtgggatgaa	gagagagatg	gaggaatttg	1680
ccccaggtta	ctcagctaga	aggtggtgaa	gaactcaagc	cttcggatat	cagcgcttg	1740
catttaacta	ccaatcggtc	ctgctgggac	tccggctcct	ctggcaccat	ccccgggacc	1800
tactcagaga	gtttgcacgt	ggccggtcgc	gttccatcgt	ctaacaaggt	ccagcacagc	1860
gcaaatccga	agatcgtcta	ccccggggaa	aaagagagtc	tgtttaattc	tctgtggcc	1920
ctccaagtga	gttcttttgg	gttccattgc	ctagacgagg	aaagtgaggc	tttgctgct	1980
ctgcgctcac	agggtcggca	agtagtgga	ccctaggttc	ctgcagtatt	ccagagataa	2040
tcaaagctgc	acaggtctcg	tattttttat	gcaaaggcgt	ccggaaggct	cgaactctcc	2100
cttgacacaag	cccatctgtc	tctgtgcgcc	gccccggga	cacggaagca	ggcggcgagc	2160
agcgccgagt	gggtggagaa	cgtccccc	ccactcacc	ctcgccaac	tctccgcgc	2220
ttctcagccg	gcaccacga	ggcgacctc	tctcgcccta	aaaaaaaaa	aaaaaatcc	2280
cggcctcccc	tgcacccgc	ccgcgcgcc	cagggagctg	cattaatt	aatctcgtg	2340
aataattgaa	ggccagagat	ttattcgagc	ttcgccggg	gagggagcgc	agctgggccg	2400
cgtttaggct	gcaccaccgc	cgtgtttcag	ccgctcgact	ccgctggacc	tgggaccccc	2460
agacgtggga	ggatggggtg	ggtgtgcctg	cctgtgagtt	tgggggtgag	tgtgagctga	2520
agcgggtgct	ccggggagtg	aggagggagc	gccaggggct	gctccaggga	ggcgagagcg	2580
gaggggcatc	ccgggtctcc	gcgcggtcgc	ctgcgcttca	ccccgcacgg	ggtgacctgg	2640
ggccacgcgg	gcttcagggg	aaacaatagc	tactccttag	atcctgggct	cctgccaccg	2700
gctgcccaag	ccttcccgga	cgagcggcgg	ggcctctttt	cttatttggc	taatttatgg	2760
cgagaggctg	ggggaaggga	tggcagagga	gggaccgcga	ctgaaaatgg	gggcgggggg	2820
cggcgggttaa	aggagttgcc	cgagcggcgg	gcgcgggtga	tgtcagctct	cgacgaaaat	2880
agagagggat	cgctgcaaa	tccccagctc	cggcggggct	aaaccttgea	atccctccct	2940
ggcggcgcc	gagccagagc	gcagcggcct	ccaccgcctc	cccaggcgcg	cacacaccgc	3000
cacacgcgca	cgcacgctca	ccgtcctctg	ccaccactct	ctgctcccgc	cactcgccgc	3060
gcccgcgagc	cccgcagcaa	agcacagggtg	gcagcggctg	caggggcgca	tcgccggcgt	3120
gcgcctcct	gcagccctgg	gcgcacgcgt	ctctcgggga	agccaccctc	ggagcccccg	3180
gagctccccg	ccaagcgcca	tccccgcggg	cggaggggag	cgcggtcgc	gcgccgtgga	3240
gagccgggac	gcggattagc	gcccgcagga	gcctcctgcg	cccgttgagg	cgctaaaggg	3300
cttaccgccg	aggcgggtgg	aagggcgggc	agaggctcct	cttaaatacc	gctcccgcc	3360
gcacttcgcg	ctcaccgccg	cgtccgcttt	ctccctcgcc	cacagctgcc	ggatagtgt	3420
gaagaggagg	ggcggttccc	cagaccatgg	catctacgga	agggtagagg	gatttttatc	3480
tgtaccgcgc	ggaaagcggg	gtcacgcgcg	gggtggtggc	gcccctatcc	gggatgcgga	3540
tagagaggcg	gcggcgcgcg	gcctcgagg	tggtagcgga	gccgtagctt	ggctggggat	3600
gggatggtgg	ggaggggatt	gattttcttt	cctggagatt	gctgcttaat	cctttgaaaa	3660
tgcgagaggt	ggaggggtgt	tttattttga	taaaaagggt	aaggtgcgct	gggggcctga	3720
gagtgtagag	aagaaatcct	cttgagggtta	cttttgggat	ttcaaaacaa	taggggattg	3780
ggcatagtgt	gagcagacac	cggggtagca	gcgcctggag	cgcgcgccc	caggcccag	3840
gcgggcttgc	aggtggtgcc	ggctcggaag	gaatgagcca	agacagggcc	ctggggcggg	3900
gcaaggacca	gcgcgcgcgg	ccttgaacgc	caggtttgca	gagtcgccat	ggagatgctg	3960
ggcccgtctc	gatcggctct	tgtccctgga	aggcggaatc	tccctggcta	gctctaagga	4020
aggggtggaag	agatttgggt	gcttcccggg	aggcgggaaa	acgtgtggtt	tgggacaagg	4080
gcaggagtgc	ccagactcca	gcgggcaggg	atagcattgg	cttccctatt	cagcccagg	4140
atctggagt	gtgtcctgcc	tcccagatt	ccagctggca	tggggaagc	tccctcgag	4200
tgataactaa	agacaattgt	ctttagcaag	agacagaagg	ggctgcaggg	ggcaaaagga	4260
ttctttgaat	actcacacat	caaaggaaag	gtccacagag	tccttgacc	agtatctccc	4320
agaaaacttt	ttgggcttcg	tagaacctga	gtggcaatga	aaagactggg	cagctcagcc	4380
cttttggttaa	ttcccaaat	tgcagttact	cacttgcaag	cgatcacaaa	atccatgtta	4440
tgtgaaaagc	aaatatcagg	ggcttctctg	ggctcaagtg	gtggtgttgg	cattttccag	4500
tttctcttaa	gaaattttac	caactccgca	ggctgtttt	aggggaatgg	atctctaaac	4560
aggctgaaga	gctggtatcc	aaagccagat	ctctagactg	caatctccaa	tagaaggaaa	4620
atatttctag	aactgtctct	ctgtccagga	gaagggaatc	cagcacactg	gcggccgtta	4680
ctagtggatc	cgagct					4696

<211> 2718
<212> DNA
<213> Homo sapiens

<400> 2

```
ggtaccttgc tcttggcagt gagegtgaat gaatggcaca gctcagcccc tgaagcctgt 60
gtgcagagat tgagggattg tgatggagta gttcattcat gctcatgtta agggggggtgc 120
taatagcaga ctagtgtctc tgcgattatt aatatctagg tctgggacag attgtgatgg 180
cttcttttcc agttgccacc tcagcagaaa gggaaataga aaaccctaac ttgtaaagtt 240
agacaattag actgtaaagt ttgtatatgt gacaacttca gatacaaaga cacacactta 300
cccttgacgg ggcttaagag gagagtgtca aacataatac caaagtgaaa gaagatagct 360
cttcatctac aaattatttt taaacacatt taccagggtta aacaataact aatttttcgg 420
aagagaagag tacccaaagt caaatgccct aagacgaaga gatgcttatg gcattttttt 480
ttaaataaag aaaatgcaaa gttagagtgg ttctgaagga acctaggatg aataaggtac 540
agacatgatt attctaattg tgcagacagg attgagagag aagggggggag gggagagatg 600
gagaaaggca tggatggaag atgacgtttg gattcagatt ttggaaagga gagttaaagga 660
aggaggttaag cagagattta ttttttaaatt tttattaatg tgttttcccc tctttttctt 720
gttatttttc tcatctgtct gttcatactt ggatattttg tccaataaac tatcttctaa 780
ggactctgaa aatgcactga atatttttgg agggtttact ggggtgccag acgccacttt 840
aggagtttta catatcctct ccatttcatt tagttctctt agcacagaga agtgggagaa 900
gatagtccca ttttacaggt gggatgaaga gagagatgga ggaatttgcc ccaggttact 960
cagctagaag gtggtgaaga actcaagcct tcggatatca gcgcctggca tttaactacc 1020
aatcggtcct gctgggactc cggtcctct ggaccatcc ccgggacctt ctacagagat 1080
ttgcacgtgg ccggtcgcgt tccatcgtct aacaaggtcc agcacagcgc aaatccgaag 1140
atcgtctacc ccggggaaaa agagagtctg ttaattctc ctgtggccct ccaagtgagt 1200
tcttttgggt tccattgcct agacgaggaa agtgaggctt tgctgtctct gcgctcacag 1260
ggtcggcaag tagtgggacc ctaggttcct gcagtattcc agagataatc aaagctgcac 1320
aggtctctgc atttttatgc aaaggcgctc ggaaaggctc aactctccct tgcacaagcc 1380
catctgtctc tgtgcgccgc ccccgggaca cggaagcagg cggcgagcag cgccgagtgg 1440
gtggagaacc gtcccccgcc actcaccctc cggccaactc tccgcgcctt ctacgccgpc 1500
accacagagg ccgacctctc tcggcctaaa aaaaaaaaaa aaaaatcccg gcctcccctg 1560
caccgccccc gccgccccca gggagctgca ttaattattaa tctcgtgaa taattgaagg 1620
ccagagattt attcagactt cgggcgggga gggagcgcag ctgggcccgc tttaggctgc 1680
accaccgcgc tgtttcagcc gctcgactcc gctggacctg ggacccccag acgtgggagg 1740
atggggtggg tgtgcctgcc tgtgagtttg ggggtgagtg tgagctgaag cgggtgctcc 1800
ggggagtgag gagggagcgc caggggctgc tccagggagg cggagacgga ggggcatccc 1860
gggtctccgc gcggtgcctt gcgcttcacc ccgcacgggg tgacctgggg ccacgcgggc 1920
ttcaggggaa acaatagcta ctcttagat cctgggctcc tgccaccggc tgcccaagcc 1980
ttcccgacg agcggcgggg cctcttttct tatttggcta atttatggcg agaggctggg 2040
ggaagggatg gcagaggagg gaccgcgact gaaaatgggg gcggggggcg gcggttaaag 2100
gagttgcccg agggggcggc gcgggtgatg tcagctctcg acgaaaatag agagggatcg 2160
cctgcaaata cccagctccg gcggggctaa accttgcaat ccctccctgg ccggcgccga 2220
gccagagcgc agcggcctcc accgcctccc caggcgcgca cacaccgca cacgcgcacg 2280
cacgtcacc gtcctctgcc accactctct gctcccgcga ctgcgcgcgc ccgcgagccc 2340
cgcagcaaag cacaggtggc agcggctgca ggggcgcate gccggcgtgc gccctcctgc 2400
agccctgggc gcatcgctct ctcggggaag ccacctcgg agccccgga gctccccgcc 2460
aagcgccatc ccgcggggcg gaggggagcg cgggtcgcgc gccgtggaga gccgggacgc 2520
ggattagcgc ccgcaggagc ctctgcgcc cgttgaggcg ctaaagggct taccgccgag 2580
gcgggtggaa gggcgggcag aggtcctct taaataccgc tcccgccgc acttcgcgct 2640
caccgcggcg tccgttttct ccctcgccca cagctgcggg atagtctga agaggagggg 2700
gcgttccccca gaccatgg                                     2718
```

<210> 3
<211> 2454
<212> DNA
<213> Homo sapiens

<400> 3

```
gggtaccttgc tcttggcagt gaggcgtgaat gaatggcaca gctcagcccc tgaagcctgt 60
gtgcagagat tgaggggattg tgatggagta gttcattcat gctcatgtta aggggggtgc 120
taatagcaga ctagtgtctcc tgcgattatt aatatctagg tctgggacag attgtgatgg 180
cttcttttcc agttgccacc tcagcagaaa gggaaataga aaaccctaac ttgtaaagtt 240
agacaattag actgtaaagt ttgtatatgt gacaacttca gatacaaaga cacacactta 300
cccttgacgg ggcttaagag gagagtgtca aacataatac caaagtgaaa gaagatagct 360
cttcacctac aaattatttt taaacacatt taccaggtta aacaataact aatttttcgg 420
aagagaagag tacccaaagt caaatgccct aagacgaaga gatgcttatg gcattttttt 480
ttaaataaag aaaatgcaaa gttagagtgg ttctgaagga acctaggatg aataaggtac 540
agacatgatt attctaattg tgcagacagg attgagagag aaggggggag gggagagatg 600
gagaaaggca tggatggaag atgacgtttg gattcagatt ttggaaagga gagtaaagga 660
aggaggtaaag cagagatttta ttttttaaat tttattaatg tgttttcccc tctttttctt 720
gttatttttc tcatctgtct gttcatactt ggatattttg tccaataaac tatcttctaa 780
ggactctgaa aatgcactga atatttttgg agggtttact ggggtgccag acgccacttt 840
aggagtttta catatcctct ccatttcatt tagttctctt agcacagaga agtgggagaa 900
gatagtccca ttttacaggt gggatgaaga gagagatgga ggaatttgcc ccaggttact 960
cagctagaag gtggtgaaga actcaagcct tcggatatca gcgcctggca ttttaactacc 1020
aatcggtcct gctgggactc cggtcctct ggaccatcc ccgggacct a ctcagagagt 1080
ttgcacgtgg ccggtcgcgt tccatcgtct aacaaggctc agcacagcgc aaatccgaag 1140
atcgtctacc ccggggaaaa agagagtctg ttttaattctc ctgtggccct ccaagtgagt 1200
tcttttgggt tcattgcct agacgaggaa agtgaggctt tgctgtctct gcgtcacag 1260
ggtcggcaag tagtgggacc ctaggttcct gcagtattcc agagataatc aaagctgcac 1320
aggctctctc atttttatgc aaaggcgctc ggaaggetcg aactctccct tgcacaagcc 1380
catctgtctc tgtgcgccgc ccccgggaca cggaaagcagg cggcgagcag cgccgagtgg 1440
gtggagaacc gtcccccgcc actcaccctc cggccaactc tccgcgcctt ctcagccggc 1500
accacagagg ccgacctctc tcggcctaaa aaaaaaaaaa aaaaatcccg gcctccccctg 1560
caccccgccc gccgccccca gggagctgca ttaatatata tctcgtgaa taattgaagg 1620
ccagagattt attcgagctt cggcggggga gggagcgcag ctgggcccgc tttaggctgc 1680
accacccgcg tgtttcagcc gctcgactcc gctggacctg ggacccccag acgtgggagg 1740
atgggggtggg tgtgcctgcc tgtgagtttg ggggtgagtg tgagctgaag cgggtgctcc 1800
ggggagtgag gagggagcgc caggggctgc tccagggagg cggagacgga ggggcatccc 1860
gggtctccgc gcggtcgcct gcgttcacc ccgcacgggg tgacctgggg ccacgcgggc 1920
ttcaggggaa acaatagcta ctcttagat cctgggctcc tgccaccggc tgcccaagcc 1980
ttcccgacg agcggcgggg cctcttttct tatttggcta atttatggcg agaggctggg 2040
ggaagggatg gcagaggagg gaccgcgact gaaaatgggg gcggggggcg gcggttaaag 2100
gagttgcccg aggcggcggc gcgggtgatg tcagctctcg acgaaaatag agagggatcg 2160
cctgcaaata cccagctccg gcggggctaa accttgcaat ccctccctgg ccggcgccga 2220
gccagagcgc agcggcctcc accgctccc caggcgcgca cacaccgca cagcgcacg 2280
cacgtcacc gtectctgcc accactctct gctcccgca ctgcgcgcgc ccgcgagccc 2340
cgcagcaaag cacagggtggc agcggctgca ggggcgcac gccggcgtgc gccctcctgc 2400
agccctgggc gcacgtctct ctcggggaag ccacctcgg agccccgga gctc 2454
```

<210> 4

<211> 861

<212> DNA

<213> Homo sapiens

<400> 4

```
cccggtctc cgcgcggtcg cctgcgcttc accccgcacg gggtgacctg gggccacgcg 60
ggcttcaggg gaaacaatag ctactcctta gatcctgggc tcctgccacc ggctgcccga 120
gccttcccgg acgagcggcg gggcctcttt tcttatttgg ctaatttatg gcgagaggct 180
gggggaaggg atggcagagg agggaccgcg actgaaaatg ggggcggggg gcggcggtta 240
aaggagtgc ccgaggcggc ggcgcgggtg atgtcagctc tcgacgaaaa tagagaggga 300
tcgctgcaa atccccagct ccggcggggc taaaccttgc aatccctccc tggccggcgc 360
```

```
cgagccagag cgcagcggcc tccaccgctt cccagggcgc gcacacaccc gcacacgcgc 420
acgcacgctc accgtcctct gccaccactc tctgctcccg ccactcgccg cgcccgcgag 480
ccccgcagca aagcacaggt ggcagcggct gcagggggcgc atcgccggcg tgcgcctcc 540
tgagccctg ggcgcctcgc tctctcgggg aagccacctt cggagcccc ggagctcccc 600
gccaagcgc atccccgcg gcggagggga gcgcgggtcg cgcgccgtgg agagccggga 660
cgcggattag cgcgcgcagg agcctcctgc gcccggtgag gcgctaaagg gcttaccctg 720
gaggcgggtg gaagggcggg cagaggctcc tcttaaatac cgtccccgc cgcacttcgc 780
gtcaccccc gcgtccgctt tctccctcgc ccacagctgc cggatagtgc tgaagaggag 840
ggggcggtcc ccagaccatg g 861
```